

## **Detection of abandoned mineshafts near railroads**

History shows us that natural and man-made cavities collapse regularly. Rapid collapse of these voids can be a serious hazard to buildings and infrastructure and this is especially true for abandoned mineshafts near railways. In order to reduce the risk the abandoned shaft has to be treated. Unfortunately, due to erosion and agriculture, it is often that all visible evidences of an old abandoned mineshaft have disappeared and the shaft can not be treated.

Sometimes the existence of a mineshaft in a certain area is known, but due to unreliable or incomplete historical data the exact location is may be doubtful. For example, if it is estimated that the actual location of the shaft is within 20 metres of the initial estimated location then the probability of finding a mineshaft 1 metre wide in an area of 40 by 40 metres by drilling is very slim. Exhausted drilling is also very expensive and disruptive.

Use of geophysical methods could be a better and more cost-effective method to outline the mineshaft. Unfortunately, the presence of the railway itself can have serious limitations on the feasibility of some of the geophysical techniques. Therefore the first part of this project is to assess the applicability of the present-day geophysical methods to detect a mineshaft near railways. The assessment includes various types of shafts in various geological settings. Also the feasibility of geophysical surveying in relation to possession management will be determined. The purpose of the second part of the project is to develop new methods or improve existing techniques.